## REMARKS/ARGUMENTS

Claims 1-6 and 8-18 are currently a part of this application. Applicant respectfully traverses the rejection for at least the reasons as set forth below. Accordingly, reconsideration of this application is respectfully requested.

Claims 1-6 and 8-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 5,518,586 to Mirous (hereafter "Mirous") in view of U.S. Pat. No. 6,228,281 to Sage (hereafter "Sage"), and further in view of U.S. Pat. No. 6,432,482 to Jaffee et al. (hereafter "Jaffee").

Specifically, the Examiner asserts that Mirous and Sage generally teach all the steps of claim 1 of the instant invention. The Examiner admits that Mirous and Sage do no disclose that the drying and binder application steps occur on adjacent endless moving conveyers. However, the Examiner states that Jaffee discloses a conventional process for forming and drying a mat on a permeable moving belt (inherently endless), and transferring the dried mat to a second moving screen or belt (inherently endless) where a binding resin is applied.

The Examiner concedes that Jaffee does not explicitly state that the wet web is dewatered on the moving screen. However, the Examiner states that Jaffee discloses that preferred processes for the production of the mats are those known processes using mat forming machines like the Hydroformer or Deltaformer. The Examiner alleges that dewatering of the wet mat on the moving screen of the machine is inherent from the descriptions and diagrams of the mat formers, or at least would have been obvious to one of ordinary skill in the art.

Applicant respectfully traverses the 35 U.S.C. § 103(a) rejection for at least the reasons as set forth below.

**a. The invention overcomes the shortcomings of the prior art.**

In the prior art, the standard process for preparing glass webs useful in many applications such as substrates in the formation of building materials, e.g. roofing membranes, high strength fabrics and the like, is the wet lay process. A major problem associated with the preparation of glass fiber mats by the wet lay process is the lack of strength of the wet individual glass fibers in the drying step prior to the binding step. That is, individual glass fibers disposed on a moving conveyer, subsequent to white water treatment, where substantial drying occurs, but prior to transfer to a downstream moving conveyer, where binding occurs, fall off the drying conveyer due to insufficient strength of the glass fibers (see Background of the Prior Art, page 1).

A prior art method of overcoming this problem has been to provide a hiatus between the drying and binding steps. That is, the glass fibers, after separation in the white water treatment step, are allowed to dry for a few days before being binded into webs. Although this expedient is effective, it obviously markedly slows down the glass fiber web manufacturing process and is thus undesirable.

The present invention provides a new glass fiber web prepared by a wet lay process in which the strength of glass fibers have adequate strength so that the problem of loss of glass fibers between the drying and binding steps is overcome.

The present invention is directed to a new glass fiber mat and a process for making the mat where individual glass fibers are not lost, due to drop off, between the drying and binding steps. After agitating the slurry to separate the glass fibers into individual strands, the recovered individual glass fiber strands are thereupon dried. The drying step is effectuated by collecting the wet, sized glass fibers on an endless moving conveyer. As the glass fibers move on the

endless conveyer, they are heated and vacuumed to remove water. By the time the wet glass fibers traverse the length of the endless conveyer, the drying step is completed.

Immediately subsequent to the drying step, the binding step is initiated. This step involves transfer of the dried glass fibers, coming off the drying endless conveyer, onto an adjacent endless moving binding conveyer. It is at this point that the advantage of the present invention is manifested. In the past, an unacceptable percentage of glass fibers, if not allowed to dry for up to a few days after separation, fell into the space between the drying and binding conveyors. However, the sized glass fibers of the present invention attach to each other to provide the requisite strength so that glass fiber drop off is substantially reduced or eliminated between drying and binding conveyers.

**b. The reference of Jaffee**

Jaffee, in Fig. 1 and the description (Col. 4, lines 5-24), teaches that the mat 28 is formed in the mat forming machine 17. The diluted fiber slurry flows against an inclined moving permeable belt inside the machine 17. The wet mat is formed and then dewatered to a desired level using a suction box 29. The mat is dried over the suction box 29. The Examiner alleges that Jaffee teaches that this wet nonwoven layer of fiber 30 is then transferred to a second moving screen. However, this second moving screen is for the binder application. This aspect does not teach drying the mat while the mat is moving, but teaches that the mat is transferred to a moving screen and then run through a binder application on a moving screen.

Jaffee specifically teaches that the mat is "then transferred to a second moving screen". If the mat were already being dried on a moving screen, it would not then be transferred to a moving screen.

There are two moving components in Jaffee alleged by the Examiner. First is the inclined moving permeable belt where the fiber is collected and builds up a mat (Col. 4, lines 5-8). On this moving belt, the mat is not dried because it is not formed yet. The second moving belt is where the binder application takes place (Col. 4, lines 15-20). In fact, nowhere does Jaffee teach the drying step is performed while the belt is moving, and prior to the binding application. The Examiner states that two suction boxes 39 and 41 are also shown in Fig. 1; however, these are irrelevant as these are after the binder application and the invention is directed to drying the mat while it is moving prior to the binding application.

In fact, the teachings of Jaffee are exactly the shortcomings described in the prior art on page 1, lines 19-27 of the present application. If glass mats were prepared using the Jaffee reference, subsequent to white water treatment (after formation in the machine 17), but prior to transfer to a downstream moving conveyer (binder applicator 35), individual glass fibers would fall off the drying conveyor (at suction box 29) due to insufficient strength of the glass fibers. In fact, when suction boxes are used, the mat needs to be held over the suction box for a period of time for it to dry.

The present invention, however, teaches that the individual glass fibers are dried as the glass fibers move on the conveyer; thus, they are dried while moving. By the time they reach the length of the endless conveyer, the drying step is completed and the binding step is initiated. This process substantially reduces glass fiber drop off and is quicker than waiting for a few days for the drying step.

Jaffee on the other hand, does not teach this step. Therefore, Applicants submit that the reference fails to disclose the elements of independent claims 1 and 11 as alleged by the Examiner.

**b. The Hydroformer ™ and Deltaformer ™**

The Examiner alleges that the Hydroformer and Deltaformer described in Jaffee teach or make obvious the element of the independent claims of drying the glass fiber mat while moving on the conveyer.

The Hydroformer reference specifically states that the process of nonwoven production on the Hydroformer has been derived from the papermaking process, and it involves the following typical steps:

- dispersion of fibers
- continuous formation of nonwovens on an inclined wire by means of filtration
- solidification, drying and reeling of the formed nonwovens.

The Examiner alleges that the entire process is continuous, which is not taught by the Hydroformer reference. The only continuous aspect taught is clearly the formation of the nonwovens. This is taught by the prior art as set out in the background of the prior art. The solidification, drying and reeling are of the formed nonwovens. These steps are different and the Hydroformer reference never mentions that the drying step is performed on a moving conveyer or may be performed on a moving conveyer. Again, the Examiner takes the word "continuous" and alleges its obvious that the entire process is "continuous", without citing any art that shows this step being performed. The present invention is directed to drying the glass fiber mat on a moving conveyer prior to binding. This reference fails to teach this feature.

The Examiner further cites the Deltaformer reference as teaching this step. Similar to the Hydroformer, the Deltaformer fails to show that the drying step is performed on a moving conveyer prior to the binding step, as claimed in the present application.

The Examiner concedes that Jaffee does not explicitly state or teach that the wet web is dewatered on the moving screen, but alleges that the process is inherent or at least would have been obvious to one of ordinary skill in the art.

In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

The Examiner throughout the Office Action alleges that because certain steps in the mat forming process are "continuous", that the entire process is continuous, including the drying step, and that all steps can be performed on a moving conveyer if one step may be. However, this is not sufficient to establish inherency. It is clear that the references fail to teach this feature; in fact, the Examiner concedes throughout the Office Action that this step is not taught by the references. However, the Examiner claims these steps are inherent without showing that this characteristic would flow from the teachings of the prior art. As set out in the background of the prior art, the lack of this step caused the shortcomings in the prior art.

As such, an element of the present invention as recited in amended claims 1 and 11 of the present application is not found in the references of Mirous, Sage and Jaffee, individually or in combination.

It has been held by the Courts that to establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). The cited references of Mirous, Sage and Jaffee,

individually or in combination, completely fail to teach the claimed limitations of independent claims 1 and 11.

Therefore, Applicants respectfully request that the 35 U.S.C. §103(a) rejection of claims 1-6 and 8-18 under Mirous in view of Sage and further in view of Jaffee be withdrawn. Accordingly, Applicants respectfully request allowance of claims 1-6 and 8-18.

In view of the above, it is respectfully submitted that this application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance issued. If the Examiner believes that a telephone conference with Applicants' attorney would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned.

Please charge any additional fees that may be due, or credit any overpayment of same, to Deposit Account No. 03-1250 (Ref. No. FDN-2821).

Respectfully submitted,

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